

What is claimed is:

[Claim 1] 1. A hydrocarbon fluid containment article comprising:
a wall having a first surface wetted by a hydrocarbon fluid and an oppositely-disposed second surface exposed to an environment at a temperature higher than the hydrocarbon fluid; and
a coating system on the second surface of the wall, the coating system comprising an outermost layer of platinum and a ceramic barrier layer between the outermost layer and the wall, the outermost layer being exposed to the environment so as to reflect radiant energy into the environment.

[Claim 2] 2. The hydrocarbon fluid containment article according to claim 1, wherein the outermost layer has a thickness of about 150 to about 200 nm.

[Claim 3] 3. The hydrocarbon fluid containment article according to claim 1, wherein the barrier layer has a thickness of about 500 to about 1500 nm.

[Claim 4] 4. The hydrocarbon fluid containment article according to claim 1, wherein the barrier layer is formed of at least one ceramic material chosen from the group consisting of silica, alumina, tantala, hafnia, yttria, and chemical combinations of silica with boron and/or phosphorous and/or alumina.

[Claim 5] 5. The hydrocarbon fluid containment article according to claim 1, wherein the hydrocarbon fluid is at a temperature of about 105°C to about 345°C.

[Claim 6] 6. The hydrocarbon fluid containment article according to claim 1, further comprising a second coating system on the first surface of the wall, the second coating system comprising an outermost layer of platinum and a ceramic barrier layer between the outermost layer and the wall, the outermost layer being wetted by the hydrocarbon fluid.

[Claim 7] 7. The hydrocarbon fluid containment article according to claim 1, wherein the article is a gas turbine engine component.

[Claim 8] 8. The hydrocarbon fluid containment article according to claim 1, wherein the article is a gas turbine engine component chosen from the group consisting of fuel/air heat exchangers, pipes, fuel nozzles and oil sumps.

[Claim 9] 9. A gas turbine engine component comprising:

a wall having a first surface wetted by a hydrocarbon fluid at a temperature of about 105°C to about 345°C, and an oppositely-disposed second surface exposed to an environment at a temperature higher than the hydrocarbon fluid;

a first coating system on the first surface of the wall, the first coating system comprising an outermost layer of platinum and a ceramic barrier layer between the outermost layer and the wall, the outermost layer being wetted by the hydrocarbon fluid and inhibiting the formation and adhesion of carbonaceous deposits on the wall; and

a second coating system on the second surface of the wall, the second coating system comprising an outermost layer of platinum and a ceramic barrier layer between the outermost layer and the wall, the outermost layer of the second coating system being exposed to the environment so as to reflect radiant energy into the environment.

[Claim 10] 10. The gas turbine engine component according to claim 9, wherein the outermost layer of each of the first and second coating systems has a thickness of about 150 to about 500 nm.

[Claim 11] 12. The gas turbine engine component according to claim 9, wherein the outermost layer of each of the first and second coating systems has a thickness of about 150 to about 200 nm.

[Claim 12] 13. The gas turbine engine component according to claim 9, wherein the barrier layer of each of the first and second coating systems has a thickness of about 500 to about 1500 nm.

[Claim 13] 14. The gas turbine engine component according to claim 9, wherein the barrier layer of each of the first and second coating systems has a thickness of about 700 to about 1300 nm.

[Claim 14] 15. The gas turbine engine component according to claim 9, wherein the barrier layer of each of the first and second coating systems is formed of at least one ceramic material chosen from the group consisting of silica and alumina.

[Claim 15] 16. The gas turbine engine component according to claim 9, wherein the component is chosen from the group consisting of fuel/air heat exchangers, pipes, fuel nozzles and oil sumps.

[Claim 16] 17. The gas turbine engine component according to claim 9, wherein the outermost layers of each of the first and second coating systems are simultaneously deposited by chemical vapor deposition to have substantially identical thicknesses, and the barrier layer of each of the first and second coating systems are simultaneously deposited by chemical vapor deposition to have substantially identical thicknesses.

[Claim 17] 18. The gas turbine engine component according to claim 9, wherein the outermost layers have surface roughnesses of not greater than about one micrometer R_a .